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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/599,150	06/21/2000	Stuart T. Linsky	22-0133	6920

7590 03/19/2004

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EXAMINER

FERRIS, DERRICK W

ART UNIT	PAPER NUMBER
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2663

DATE MAILED: 03/19/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/599,150

Applicant(s)

LINSKY ET AL.

Examiner

Derrick W. Ferris

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 February 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 and 7-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 and 7-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. **Claims 1-5,7-22** as amended are still in consideration for this application. Applicant has amended claims **1, 2, 7-10, and 17-21**. Applicant has canceled claim 6.
2. Examiner **withdraws** the objection to the drawings. Examiner thanks applicant for making the necessary corrections.
3. Examiner **withdraws** the objection to the specification. Examiner thanks applicant for making the necessary corrections.
4. Examiner does **not withdraw** the obviousness rejection to *Dent* in view of *Peyrovian* for Office action filed **10/22/03**. In addressing applicant's arguments in the response filed **02/11/04**, applicant argues that *Dent* does not disclose "the uplink data destined for at least one of a first and a second downlink beam hop location". Examiner notes three issues with respect to applicant's arguments. First, not clearly recited in the claims is switching a packet/cell to multiple downlink beams in the same beam layout pattern or fan. *Dent* meets the above-cited limitation by switching packets to multiple beams in different fans simultaneously (e.g., see column 3, lines 6-10). Thus *Dent* teaches "the uplink data destined for at least one of a first and a second downlink beam hop location". Secondly it is unclear what applicant is arguing since applicant did not point out specific support in applicant's specification. Examiner notes steps 1110 and 1112 of applicant's figure 11 (applicant's pages 29-30). Specifically applicant teaches selecting a feed path according to its destination location hop location (also see applicant's specification at page 20, lines 11-19 where the cell is switched to a particular output port). Also recited in **claim 1** is wherein the multiple beam downlink antenna directs the waveforms derived

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from the uplink data packets to the appropriate destination terrestrial cells (not clearly recited is that the terrestrial cells are located in the same terrestrial region). Same goes for **claim 17**. It is unclear that multiple terrestrial cells are contiguously arrayed in a beam laydown pattern covering a terrestrial region. Thirdly, assuming applicant meant in the same contiguous area then examiner notes the further teaches of *Peyrovian*. Applicant did not address *Peyrovian* in their arguments. In particular, *Peyrovian* teaches routing a packet to one or more downlink beams (see e.g., page 2, paragraph 0022). The purpose of using more or more downlink beam is for multicasting (see e.g., page 2, paragraph 0029). Examiner has further clarified the motivation. Finally, examiner notes a reasonable but broad interpretation of color control signal to mean any signal that minimizes interference. As such, please find the clarified rejection below.

Examiner has withdrawn the rejection for **claim 9** and all claims that depend on claim 9, however, the examiner has written a new rejection based on applicant's claims as necessitated by amendment.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. **Claims 1-5, and 17-21** are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,377,558 to *Dent* in view of U.S. Patent Application 2001/0005671 to *Peyrovian*.

As to **claim 1**, *Dent* discloses a multi-signal transmit array with low intermodulation. In particular, *Dent* discloses in figure 13 a method for (1) “*a self addressed packet switch routing uplink data to a memory [704,804]*”, (2) “*a switch [110] that directs a waveform derived in part from the uplink data to a selected radiating element on a multiple beam array antenna in response to a hop selection signal [color selection signal 216]*”, and (3) “*the multiple beam array antenna directs the waveform to a beam hop location*”. Specifically, (1) is taught as part of steps 182 and 184, (2) is taught as part of step 186, and (3) is taught as part of steps 188 and 190 of figure 13 [*Dent* column 17 and 18]. Some examples of color control signals are steering control signals 98a-98n or through polar isolation signals RHC or LHC or through frequency of *Dent* (e.g., see column 15, lines 34-39 and column 17, lines 43-62).

What may be at issue between the examiner and applicant is whether the packet in the uplink direction is destined for more than one spot. Examiner notes that it would have been obvious to one skilled in the art prior to applicant's invention to switch a packet to more than one beam. As support and motivation, *Dent* discloses that it is possible to simultaneously transmit to multiple users as long as they lie in different fans (i.e., transmit different packet simultaneously) [e.g., column 3, lines 7-10]. Using a different interpretation *Peyrovian* discloses transmitting the same packet simultaneously to more than one beam. In particular, see e.g., page 2, paragraph 0022. One skilled in the art would be motivated to transmit the same packet to multiple beams for the purpose of multicasting. *Peyrovian* cures the above-cited deficiency by disclosing the motivation at page 2, paragraph 0029. One skilled in the art would have been motivated to send

packets that were not multicasted using the technique as disclosed by *Dent* and packets that are multicasted by the technique as described by *Peyrovian* by using either the antenna structure as disclosed by *Dent* for non-multicast packets or the antenna structure disclosed by *Peyrovian* for either non-multicast or multicast packets.

As to **claim 2**, see *Dent* column 17, lines 52-55.

As to **claim 3**, see *Dent* column 18, lines 1-20 (i.e., priority based on waiting time for each packet).

As to **claims 4 and 5**, *Dent* is silent or deficient to distinguishing a queue further by coding rate. Examiner notes that it would have been obvious to one skilled in the art prior to applicant's invention to distinguish a queue based on a coding rate. *Dent* attempts to cure the deficiency by generally disclosing that formatting is dependent on coding rate [column 19, lines 1-9]. Specifically, *Dent* discloses that different beams may have different bit rates [column 15, line 63 – column 16, line 10]. As queues are partitioned by cell (i.e., beams) [column 17, lines 52-55], one skilled in the art would be motivated to further distinguish a queue by a coding rate.

As to **claim 17**, see the rejection for claim 1.

As to **claim 18**, see *Dent* column 18, line 24 for a queue tag 714 disclosed as a "destination identifier code".

As to **claim 19**, see the rejection for claim 3.

As to **claim 20**, see the rejection for claim 4.

As to **claim 21**, see the rejection for claim 13.

7. **Claims 7, and 8** are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,377,558 to *Dent* in view of U.S. Patent Application 2001/0005671 to *Peyrovian* and U.S. Patent 3,864,679 to *Hannan et al.* ("*Hannan*").

As to **claims 7 and 8**, *Dent* and *Peyrovian* are silent to the particular physical structure of the antenna array element, which includes a reflector and feedhorns (e.g., see figure 1). Examiner notes that it would have been obvious to one skilled in the art prior to applicant's invention to use an antenna array with at least one reflector and feedhorns. As support and motivation, *Hannan* cures the above-cited deficiency by disclosing an antenna with reflector and feedhorns as is known in the art and as shown in figure 3 [column 4, lines 25-52]. In particular, one skilled in the art would have been motivated to use feedhorns to help radiate the signal.

8. **Claim 22** is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,377,558 to *Dent* in view of U.S. Patent Application 2001/0005671 to *Peyrovian* in further view of U.S. Patent 5,617,108 to *Silinsky et al.* ("*Silinsky*").

As to **claim 22**, *Dent* and *Peyrovian* are silent to using a ferrite switch. Examiner notes that it would have been obvious to someone skilled in the art prior to applicant's invention to use a "ferrite switch" for switching. As support and motivation, *Silinsky* cures the above-cited deficiency by disclosing that ferrite switches are well known in the art as an alternate to switching (column 7, lines 5-15; figure 7). Thus *Silinsky* provides a motivation for using a "ferrite switch". One skilled in the art would have been motivated to modify the references to include a ferrite switch as an alternate to switching.

Claim Rejections - 35 USC § 103

9. **Claims 1, 2, 9, 13-15, 17, 18, and 21** are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,875,181 A to *Hsu et al.* ("*Hsu*") in view of "A Satellite-Switched CDMA System for Fixed Service Communications" to *Gerakoulis et al.* ("*Gerakoulis*").

As to **claim 1**, *Hsu* discloses a packetized CDMA/TDM satellite system. In particular, *Hsu* discloses switching ATM packets from an uplink to one or more downlinks (see Abstract and figure 2). Specifically, the downlink consists of multiple spot-beams (e.g., see column 2, lines 34-37) where any users in any beam can communicate with any other user in the same or different beam. Hence information is transmitted to contiguous cells and the switch directs the waveform derived in part from each uplink data packet. Also noted is that information can be transmitted simultaneously (e.g., see column 2, lines 48-56). A packet is routed through the switch and contains a memory where the uplink packet contains destination information (see e.g., column 3, lines 1-17).

Hsu may be silent or deficient to the further limitation wherein the switch provides a color control signal to each downlink beam, to minimize interference between downlink channels.

Gerakoulis teaches the further recited limitation above at e.g., page 87, right-hand column and page 90, right-hand column.

Examiner notes that it would have been obvious to one skilled in the art prior to applicant's invention to include wherein the switch provides a color control signal to each downlink beam, to minimize interference between downlink channels. In particular, one

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skilled in the art would have been motivated to modify *Hsu* to include control channels in order to help control the flow of information on each beam for CDMA. The suggestion or motivation for doing so would have been to help find CDMA channels as well as information for a particular beam. In particular, *Gerakoulis* cures the above-cited deficiency by providing a motivation found at e.g., page 87, right-hand column. In addition, both references teach satellite communications in general and more specifically using CDMA in the downlink in addition to packet switching for use in the AT&T satellite system (e.g., see column 3, lines 41-43 of *Hsu* and page 86, left-hand column of *Gerakoulis*).

In addition, *Hsu* may be silent or deficient to the further limitation one of an equal plurality of terrestrial cells that are contiguously arrayed in a beam laydown pattern covering a terrestrial region.

Gerakoulis teaches the further recited limitation above at e.g., figure 5 at page 89.

Examiner notes that it would have been obvious to one skilled in the art prior to applicant's invention to include the further limitation one of an equal plurality of terrestrial cells that are contiguously arrayed in a beam laydown pattern covering a terrestrial region. In particular, one skilled in art would use a beam laydown pattern covering a terrestrial region that is contiguously arrayed for the purpose of optimization such as for reusing frequencies or spreading codes. *Gerakoulis* provides the further motivation by disclosing reusing spreading codes. Thus one skilled in the art would have been motivated to modify the *Hsu* reference for optimizing the cell structure of an area for reuse.

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As to **claim 2**, see *Hsu* column 3, lines 1-16.

As to **claim 9**, see similar rejection for claim 1.

As to **claims 13-15**, see *Hsu* column 3, lines 1-16.

As to **claim 17**, see similar rejection for claim 1.

As to **claim 18**, see *Hsu* column 3, lines 1-16.

As to **claim 21**, see *Hsu* column 3, lines 1-16.

10. **Claims 3-5, 11-12, 16 and 19-20** are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,875,181 A to *Hsu et al.* ("*Hsu*") in view of "A Satellite-Switched CDMA System for Fixed Service Communications" to *Gerakoulis et al.* ("*Gerakoulis*") and in further view of "Onboard Switching for ATM via Satellite" to *Gilderson et al.* ("*Gilderson*").

As to **claims 3 and 5**, *Hsu* and *Gerakoulis* may be silent or deficient to wherein the memory comprises queues distinguished by priority and code rate.

Gilderson teaches the above-cited limitation at e.g., page 69, left-hand column.

Examiner notes that it would have been obvious to one skilled in the art prior to applicant's invention to have memory comprises queues distinguished by priority and code rate. In particular, one skilled in the art would have been motivated to modify *Hsu* since *Hsu* teaches ATM and ATM is known for QoS where buffering for QoS depends on priority and code rate. Thus one skilled in the art would have been motivated to use buffering to support ATM for QoS. *Gilderson* cures the above-cites deficiency by providing a similar motivation found at e.g., page 69, left-hand column

As to **claims 11 and 12**, see similar rejection for claims 3-5.

As to **claim 16**, *Hsu* and *Gerakoulis* may be silent or deficient to a replacement address. In particular, *Hsu* discloses that switching can occur but is silent whether the actual address is modified or not.

Gilderson teaches the above-cited limitation at e.g., page 67, left-hand column.

Examiner notes that it would have been obvious to one skilled in the art prior to applicant's invention to replace an address as part of ATM switching. In particular, one skilled in the art would have been motivated to modify *Hsu* since *Hsu* teaches ATM and ATM is known for swapping addresses based on translation tables. Thus one skilled in the art would have been motivated to swap ATM addresses for switching. *Gilderson* further teaches this motivation at e.g., page 67, left-hand column. Thus *Gilderson* provides a motivation to modify the *Hsu* reference.

As to **claims 19 and 20**, see similar rejection for claims 3-5.

11. **Claims 7, 8 and 10** are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,875,181 A to *Hsu et al.* ("*Hsu*") in view of "A Satelite-Switched CDMA System for Fixed Service Communications" to *Gerakoulis et al.* ("*Gerakoulis*") in further view of U.S. Patent 3,864,679 to *Hannan et al.* ("*Hannan*").

As to **claims 7 and 8**, *Hsu* and *Gerakoulis* are silent to the particular physical structure of the antenna array element, which includes a reflector and feedhorns (e.g., see figure 2 of *Hsu*). Examiner notes that it would have been obvious to one skilled in the art prior to applicant's invention to use an antenna array with at least one reflector and feedhorns. As support and motivation, *Hannan* cures the above-cited deficiency by disclosing an antenna with reflector and feedhorns as is known in the art and as shown in

figure 3 [column 4, lines 25-52]. In particular, one skilled in the art would have been motivated to use feedhorns to help radiate the signal.

As to **claim 10**, see similar rejection for claim 8.

12. **Claim 22** is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,875,181 A to *Hsu et al.* ("*Hsu*") in view of "A Satelite-Switched CDMA System for Fixed Service Communications" to *Gerakoulis et al.* ("*Gerakoulis*") in further view of U.S. Patent 5,617,108 to *Silinsky et al.* ("*Silinsky*").

As to **claim 22**, *Hsu* and *Gerakoulis* are silent to using a ferrite switch. Examiner notes that it would have been obvious to someone skilled in the art prior to applicant's invention to use a "ferrite switch" for switching. As support and motivation, *Silinsky* cures the above-cited deficiency by disclosing that ferrite switches are well known in the art as an alternate to switching (column 7, lines 5-15; figure 7). Thus *Silinsky* provides a motivation for using a "ferrite switch". One skilled in the art would have been motivated to modify the references to include a ferrite switch as an alternate to switching.

Conclusion

13. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

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CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Derrick W. Ferris whose telephone number is (703) 305-4225. The examiner can normally be reached on M-F 9 A.M. - 4:30 P.M. E.S.T.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chau Nguyen can be reached on (703) 308-5340. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Derrick W. Ferris
Examiner
Art Unit 2663

DWF


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